

Re-thinking Turkey-US Economic Relations in the Covid-19 Context

Final Report

OCTOBER 2020

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WASHINGTON, DC



The project conducted last year ...

- Aimed to boost bilateral trade between Turkey and US to reach \$ 100 B target
- Identified high potential industries and suggested key recommendations to benefit this potential
- Shared key transversal levers to enhance economic relations between Turkey and US

... is revisited under the context of **COVID-19** and newly emerging opportunities

Global trade dynamics changing



Supply chain shifts



Amplified US-China conflict



Major changes in global trade flows



Newly emerging opportunities



Substituting China



New industries and capabilities



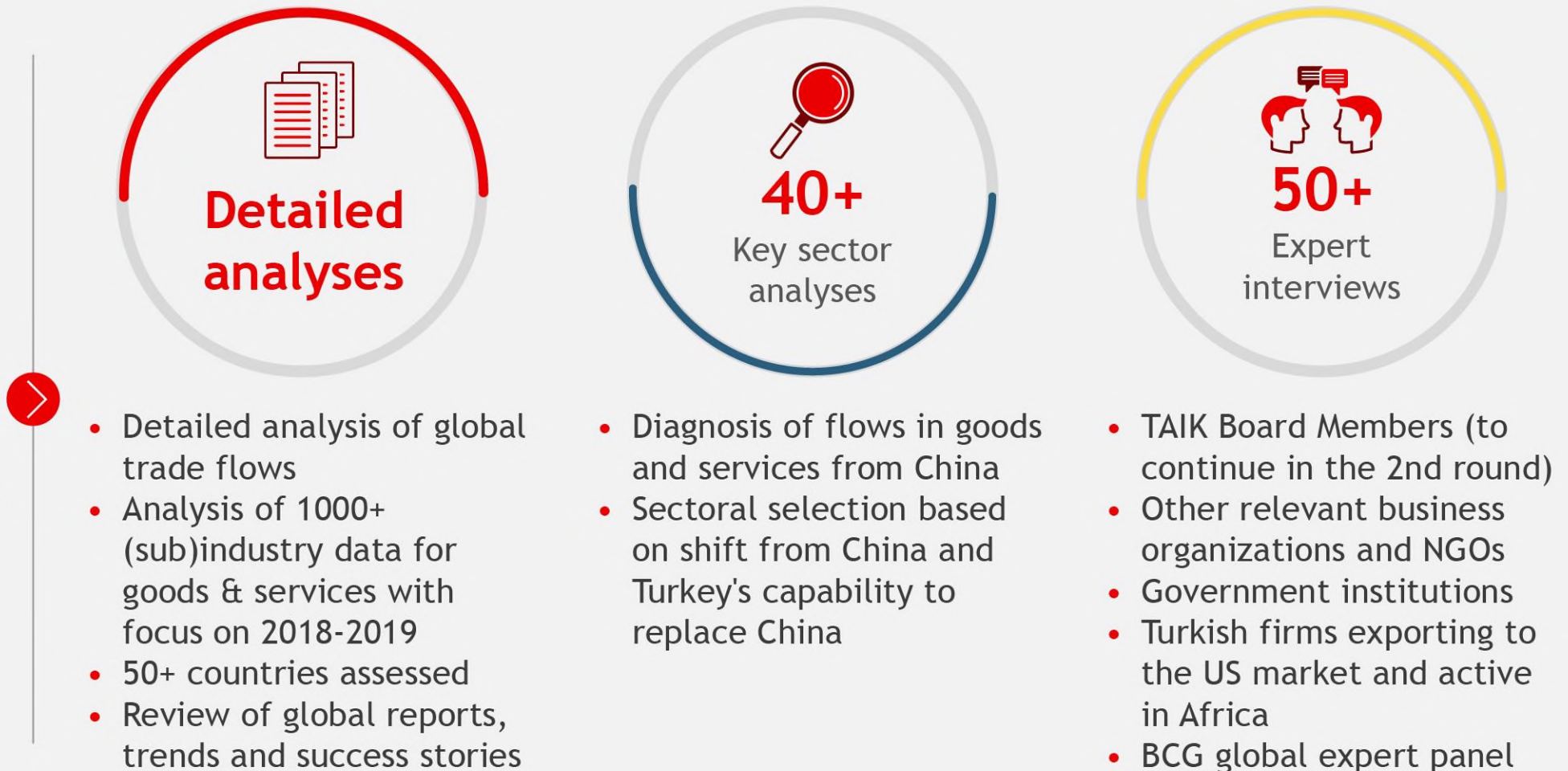
FDI perspective



Collaboration in Africa

We have investigated significantly to assess how Turkey-US economic relations can be further improved with the latest global trends

Progress across multiple dimensions



We have interviewed with key stakeholders for deep-dive topics

Selected examples

Bold moves for Turkey



Africa



Executive summary (I / III)

Covid-19 has a strong effect on global economic relations via supply-chains, global trade and investments



- Multi-national companies that have cost focused supply-chain systems have started to consider reducing the risk profile of their supply-chain systems more diversification, regionalization or reshoring
- Existing trade conflicts have been escalated to a new level with increasing trends in favor of national protectionism
- Trade and investments will be negatively affected in the short-term; but new opportunities will exist for countries and companies

Major shifts will occur in trade corridors, emerging as a significant opportunity for other countries to increase their exports and to attract FDI



- The export volume from China will shift away to other regions; the largest impact being between US and China trade corridor
- We expect \$130-200 B decline in US-China trade corridor in 2023 compared to 2019 levels
- This will provide significant trade and investment opportunity for countries like Turkey, Vietnam, Mexico, Taiwan and Poland

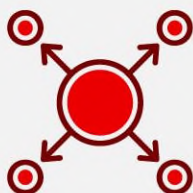
Executive summary (II / III)



Turkey's conventional industries will remain to be important ...

- Turkey has conventionally strong industries (e.g. automotive parts, textile, white goods, building materials, furniture etc.). These industries will remain to be the engine of exports to US
- Some other competitive industries (e.g. tourism, civil aerospace and jewelry) will stagnate because of Covid-19 context but will recover and contribute in mid-to-long term

... but in order to larger pie from this shift, Turkey needs to make bold moves in new industries and geographies



- Turkey needs to make bold moves in digital space and electronics to serve more to the US market
 - Digital space: Turkey has strong but underutilized potential in data services, software services and technology start-ups
 - Electrical equipment & electronics (E&E): Turkey has to invest in E&E, especially new trends (Industry 4.0, IoT, smart cities etc.) crosscutting the segment. This will be key to serve US market in large scale
- Joint ventures in Africa: Turkish and American firms have complementary skills to be more active in helping construction and infrastructural upgrading in the African continent

Executive summary (III / III)

Business communities could play an important role in strengthening Turkey-US economic relations and to further explore underutilized opportunities



- Turkish and US business communities could play an important role in:
 - Building up long-term trust-based business relations
 - Actively marketing new opportunities and capabilities to both sides
 - Help business-matching activities
 - Constructively guide policy-makers on key steps to be taken
- We strongly recommend establishing three task forces under TAIK to steer actively key topics of interest and to contribute to Turkey-US economic relations:
 - Digital Taskforce
 - Electronics Taskforce
 - Africa Taskforce

Main sections of the report



See details



Covid-19, global trends and impact on Turkey-US economic relations

Detailed assessment of Covid-19 impact on supply-chains and global trade, and potential opportunities in Turkey-US economic relations



See details



Bold Moves for Turkey

Capability assessment, identification of opportunity space, recommendations for TAIK and sizing of the price for

- Digital space: IT & Startups
- Electrical equipment & electronics



See details



Joint opportunities for Turkey and US in Africa

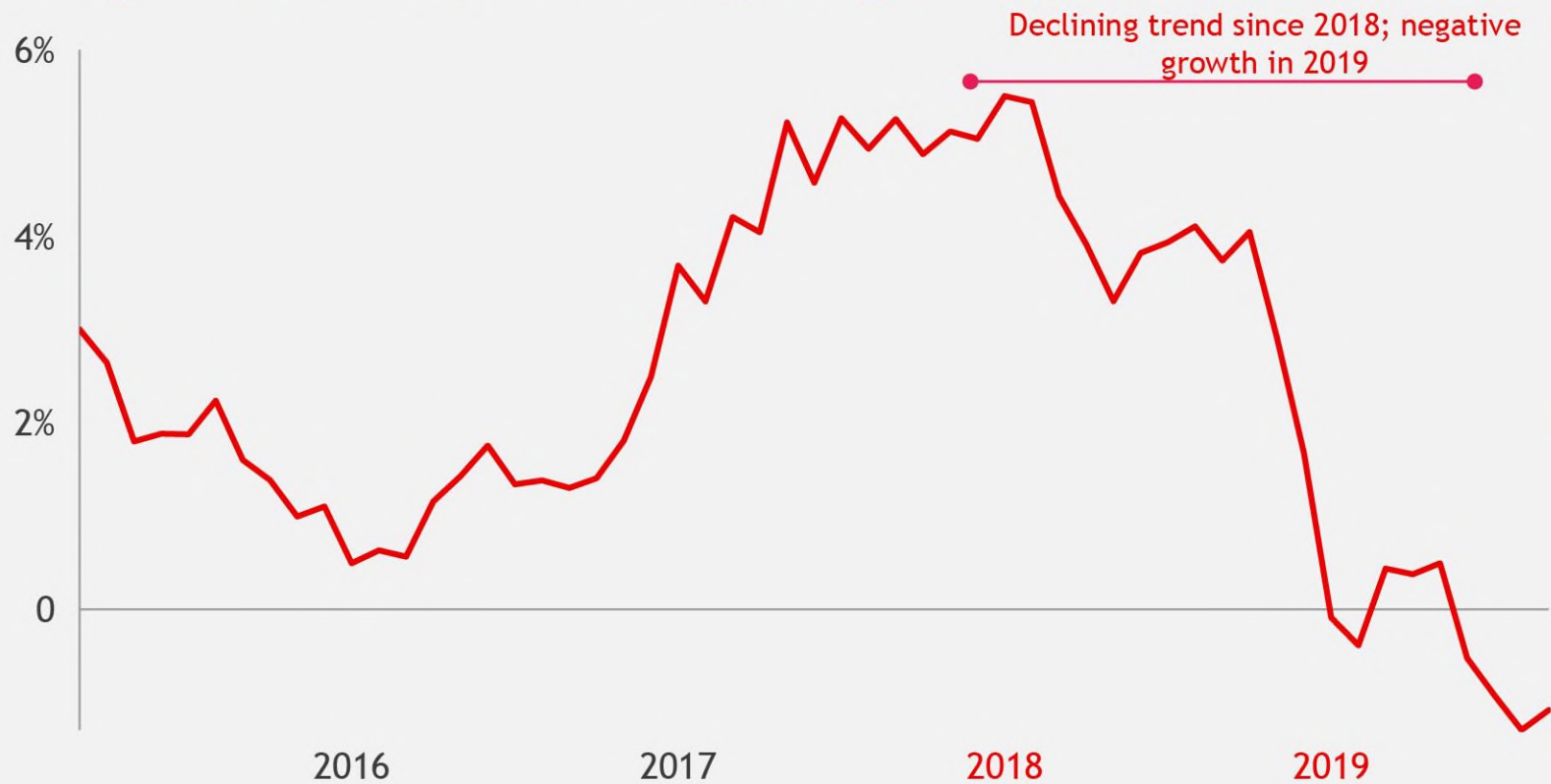
Capability and opportunity assessment for US and Turkey for Africa, recommendations for TAIK and sizing on how they can join forces



Covid-19, global trends and impact on Turkey-US economic relations

Global trade was already in decline even before the COVID-19 crisis

Change in Global Trade(3 Month Moving Average, YoY growth %)



Driven by two factors:



Rise of economic nationalism/protectionism



US-China trade war

COVID-19 intensified two key global trends putting downward pressure on trade flows

1



Supply chain shifts

- Supply chain focus on **resiliency** over **cost efficiency**
- **Re-shoring, nearshoring and diversification** expected to increase and change the supply chain structure

2



Amplified US-China conflict

- US-China trade war amplified due to rising protectionism
- US imports from China **reduced by 16% (\$ 90 B)** in one year only (2018-2019), **expected to decline further**
- Increased tendency to localize industries that pose **national security concerns**

COVID-19 unleashed vulnerabilities and risks of highly integrated global supply chains

Supply chains were dramatically affected by COVID-19



Difficulty in meeting required **supply levels** intensified in some sectors



Supply shocks triggered **stock outs** and **latency** in delivery times



Production stoppages broke out due to exposed risk with concentration on specific geographies



Raised uncertainty about future shocks

Revealing vulnerability and exposing the risks due to dependence on geographies

Not exhaustive



CEO
James Quincy

Supply chain is creaking around the world. it's getting harder to get ingredients through due to **big changes in channel mix...** Some of the smallest SKUs will have to be left out.



Apple has warned of global **"iPhone supply shortages"** resulting from its Chinese factories being shut



Many big **car manufacturers** shut downed their production facilities

Hence,
companies
revisited
their supply
chain
strategy in
favor of
resilience

Resilience & Access

Diversify options to
balance risk and
bring supply chain
operations inshore
or nearshore



Cost Efficiency

Leverage cost
efficiency levers to
minimize
production/sourcing
costs



Selected examples of shift to resiliency



Looking to shift **20%** of iPhone
production to India, **30%** of
AirPods production to Vietnam



Shifted production of **auto
components** from China to
Mexico

Supply chains are expected to change globally with reshoring, regionalization and diversification

Reshoring

Supply chains moving back in-shore or near-shore due to:

- National security concerns

 Pharmaceuticals  Telecommunications

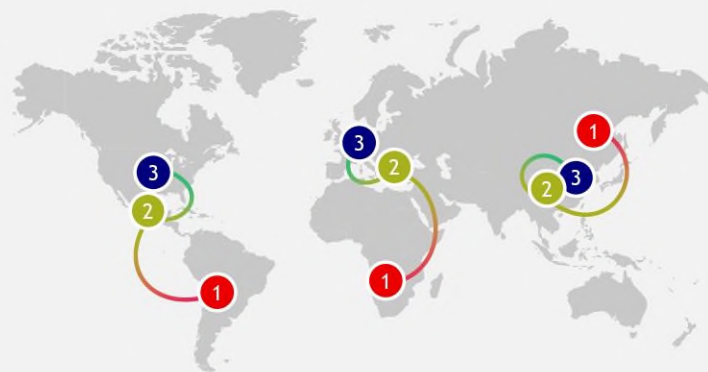


Regionalization

Supply chains moving closer to end-markets due to:

- Minimization of risk exposure



 Agriculture  Automotive - vehicles

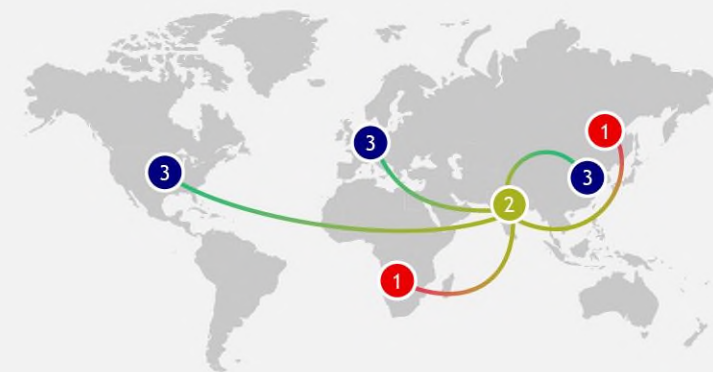


Diversification

Global supply chains shifting to new geographies due to:

- Retaining low cost base for industries with profitability concerns

 Apparel  Furniture



1 Sourcing 2 Manufacturing 3 Distribution



Degree of globalization

Source: UNCTAD, BCG Analysis

US-China trade war were also amplified by COVID-19

Existing pre-COVID issues



Concerns in the US about China becoming the biggest economy in the world with increasing global influence



Concerns in the US about the chronic and growing trade deficit with China



Concerns in the US about Chinese advancement in IT infrastructure (i.e. 5G, Huawei etc.) with national security implications



Geopolitical tensions with China (e.g. South China Sea, North Korea, Africa influence)



Additional issues with COVID



US accused China over failing to handle the outbreak of Covid-19 and escalated existing tensions between China

- US stated filing lawsuits against China for the loss of life, “human suffering” and economic losses
- Additional tariffs on China being negotiated



National security concerns have risen especially on medical technologies, biopharma and information technologies

These factors will have major impact on the main trade corridors

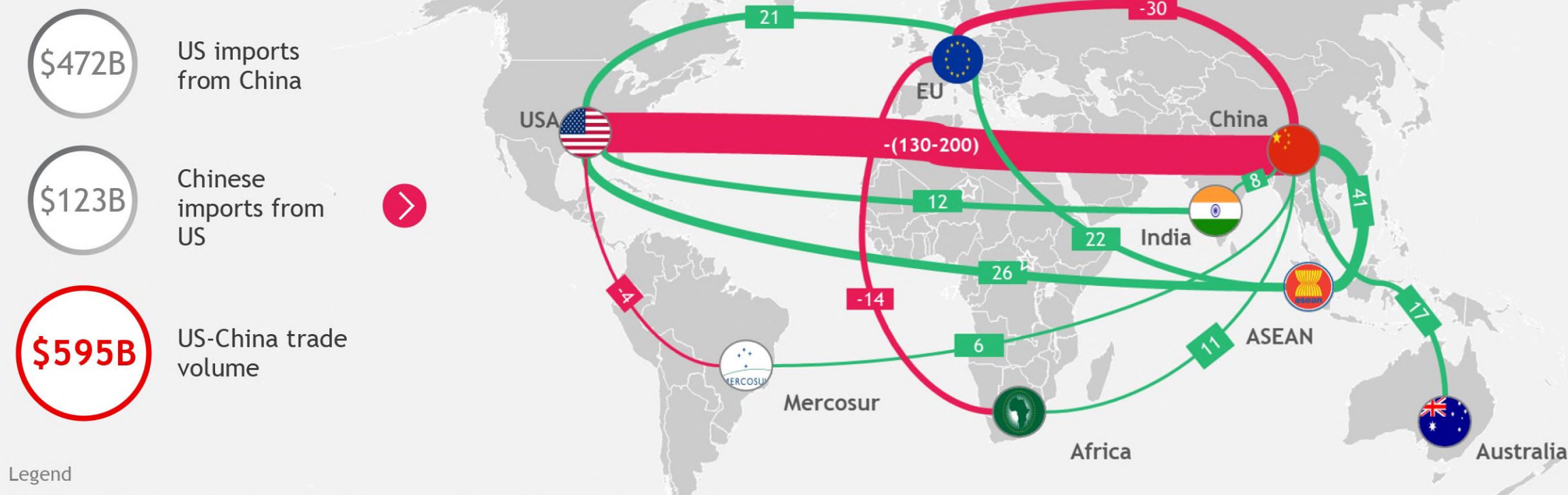
Highest impact expected on the US-China corridor with a decline of 130-200 B USD per annum

US-China trade

2019, \$ B

Base scenario: Global trade change, 2023B vs. 2019 (Main corridors¹, Billion \$)

Draft for Discussion



Legend

Width of arrow represents total change in trade flows 2023F Base vs 2019 Base

<-3% >+3%

Color of arrow represents change 2023F compared to 2019 Base

1. Corridors in the map above represent ~32% of global trade. Intra EU=~20%; NAFTA=~8%; China/Hong Kong=4%; ASEAN=3%, RoW=~32%

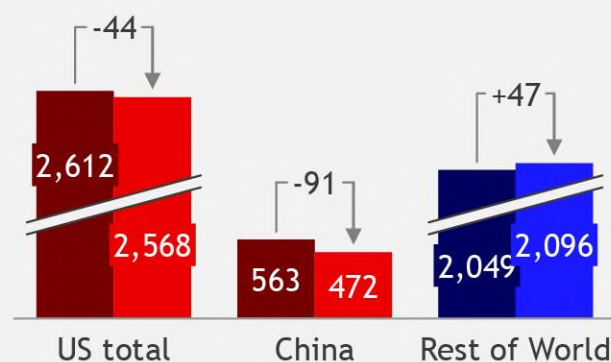
Source: BCG Trade Finance Model 2020, UN Contrade, OECD, WEF, IHS, TradeAlert, BCG Analysis

Some other countries already benefiting from this shift, however Turkey is lagging behind so far

US import change

Change in US total, China and RoW imports (\$ B)

■ : 2018 (Dark) ■ : 2019 (Light)



- Electronics -34
- Machinery -18
- Furniture -9

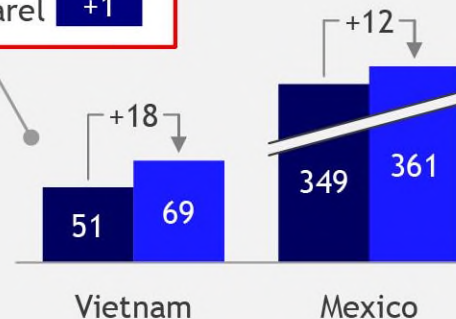
China

Rest of World

Top-3 countries with the highest increase in nominal value (\$ B)

1 Vietnam

- Electronics +11
- Furniture +2
- Tex.&Apparel +1



2 Mexico

- Automotive +8
- Agri. prods +2
- Machinery +1

3 Taiwan

- Electronics +5
- Machinery +3



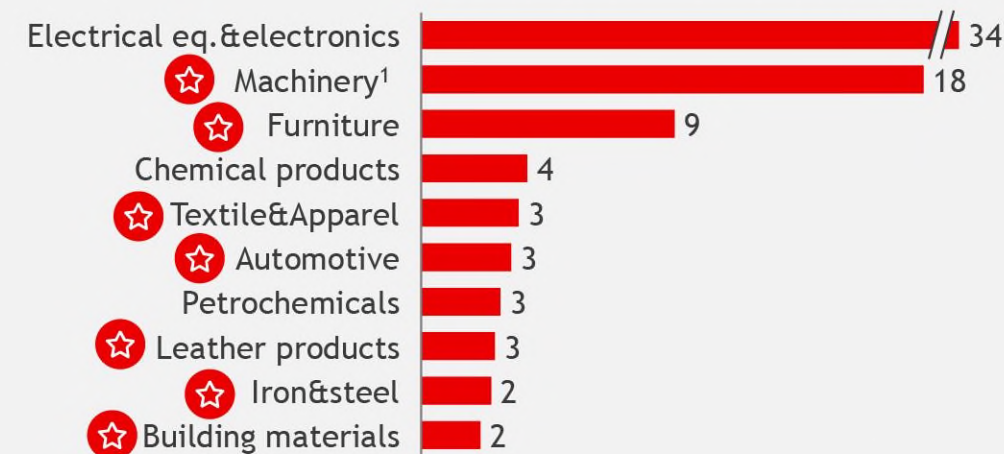
27th highest

How can Turkey benefit from this shift?

We developed a rigorous methodology to identify the opportunity space for Turkey

Shift from China is occurring in multiple industries, Turkey is competitive only in some

US' import decrease from China by top 10 industry (\$ B)



Total of Top 10 \$ 81 B

☆ Turkey's competitive industries

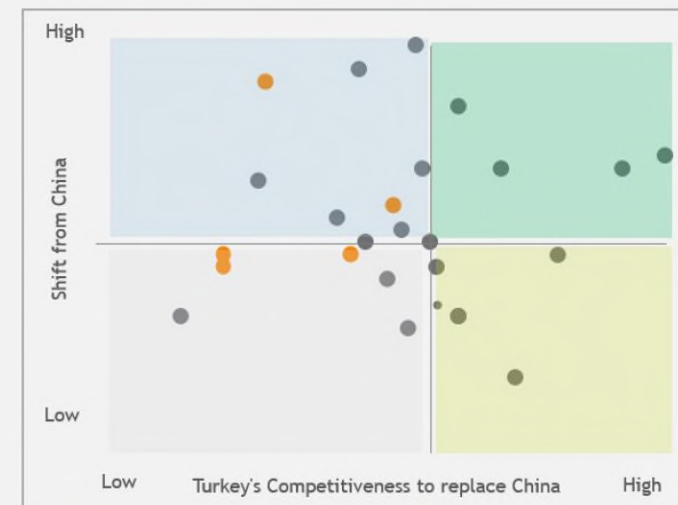
We sized the shift away from China and Turkey's capability to replace China



Shift Away from China

Potential shift of Imports in industries towards rest of the World

Market attractiveness for overall US imports was utilized in previous methodology

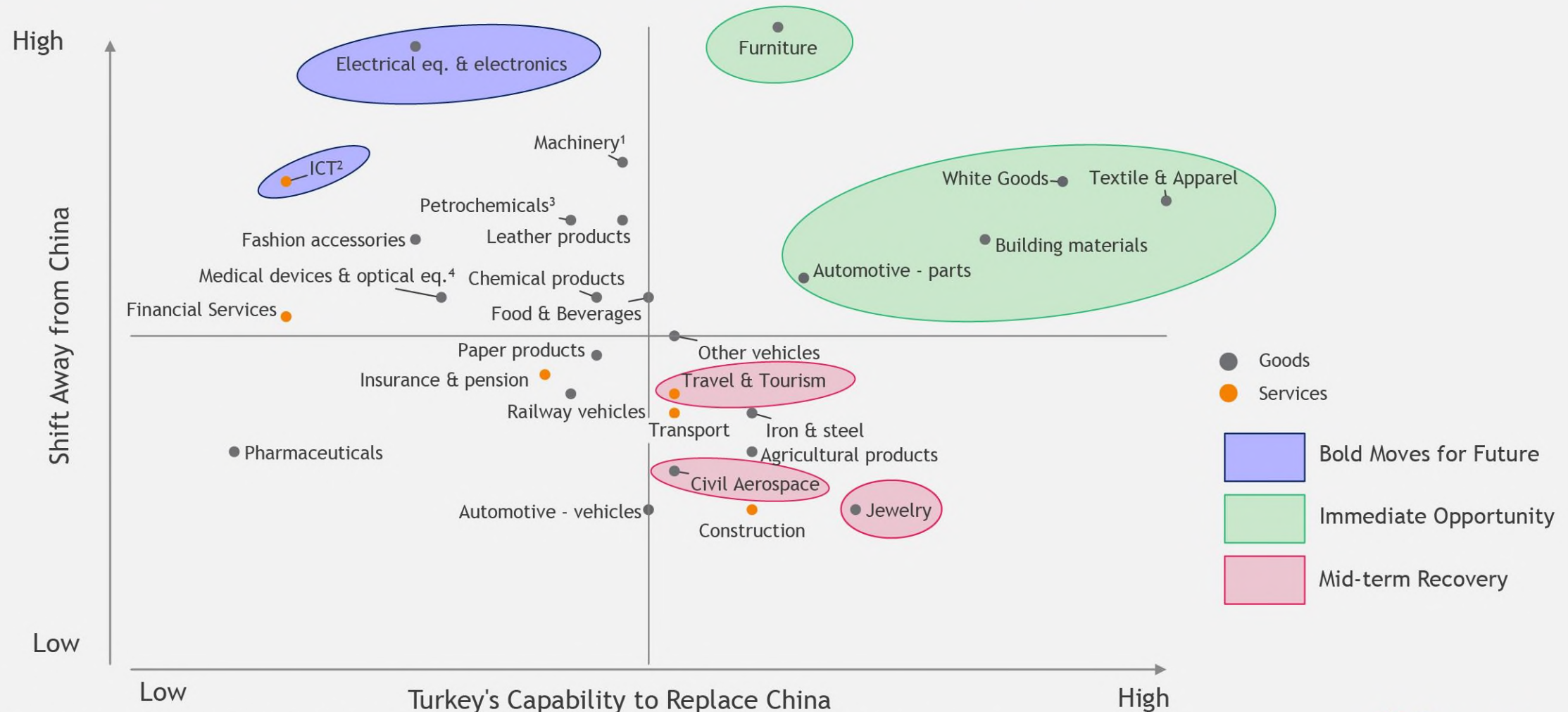


Turkey's Capability to Replace China

Turkey's relative position in the industry to capture the potential

1. Including white goods Source: Trade Map

As such, we focused on 3 main industry groups to discuss alternative opportunities and required actions for Turkey



1- Machinery excludes White Goods, 2- ICT has been assessed with its potential beyond China based on expert view

3- Petrochemicals are degraded with expert view due to import dependence, 4- Not regarded as potential due to COVID-19 future effects remaining unclear

New opportunities for Turkey can only be seized with bold moves

Turkey's previously strong industries persist to provide opportunity space

New opportunities identified

High potential areas but building competitiveness feasible only in the long-term

1 Bold Moves for Future



Electrical equipment and electronics



Digital Space

- IT Services
- Technology start-ups

Build capability now investing in the future to become competitive in the long-term

Previous findings revisited

High potential and high competitiveness in short term

2 Immediate Opportunity

React fast to grab the significant potential in immediate term in sectors Turkey is already competitive in

Low potential in short term, restructuring for solid recovery in long term

3 Mid-term Recovery

Negatively effected globally, minimize loss in short-term and build capability for long-term in sectors Turkey is already competitive in



Automotive - parts



White goods



Textile & apparel



Building materials



Furniture



Jewelry



Travel & tourism



Civil aerospace

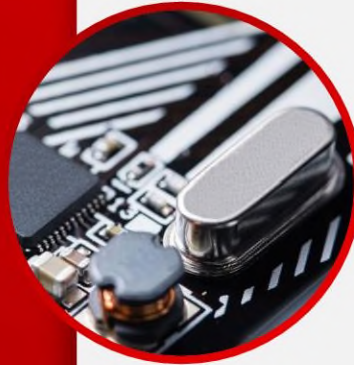


Bold moves for Turkey

We see **two**
major
opportunities for
Turkey and they
can be achieved
with **bold moves**



Digital Space: IT Services and
Technology Startups



Electrical Equipment & Electronics



Digital Space: IT Services and Technology Startups

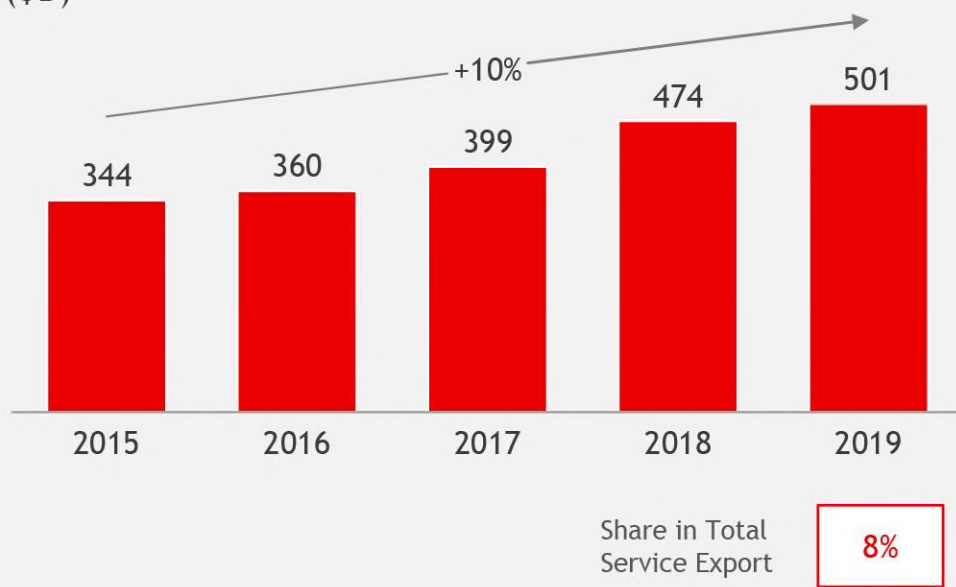


Electrical Equipment & Electronics

Digital space is growing fast through software market and technology companies

Global IT Export has increased gradually over the years

Global IT Export (\$B)



Technology companies have been growing and generating significant value for the economy

≈ 30%

Share of technology companies in 100 fastest growing companies¹

≈ \$1.5 Trillion

Cumulative valuation of Unicorn companies as of August 2020

Source: Trade Map, CB Insights
1- 100 Fastest-Growing Companies by Fortune in 2018



Turkey has strong capabilities and advantages to be a successful digital player



Turkey has strong human capabilities

IT depends more on human capital and less on capital heavy investment; Turkey is competitive in talent



Turkish companies have been exporting services in both major and niche segments

Turkish software companies have recently focused on vertical expertise allowing them to export to the US market



Turkey is strategically located to serve nearby regions and attract US based FDI

Turkey's location allows it to serve Middle East, Central Asia and Europe



Turkey is well-equipped with talent in a human-capital oriented sector

Turkey has a strong and growing labor force for IT

132,000

Employees
in IT

120,000

Software developers

+50,000

Annual number of
engineering graduates &
undergraduates



"1 Million Developers"
Project initiated

Business leaders in IT have full confidence in quality of talent in Turkey



We have extremely talented graduates, all they need is to be equipped with technical skills on the job

Müjdat Altay, Netaş CEO



Business orientation, practicality and agility skills of Turkish developers are much better than competing countries

Buğra Koyuncu, LOGO CEO



Problem solving and model design are core competencies for next generation development, Turkish developers are highly skilled in both

Önder Kaplancık, KoçDigital Managing Director







Developer market in Turkey is rich in terms of availability of highly qualified talent and reaching talented developers is not an issue at all

Türkey Önal, Narcade Co-founder



Highly capable Turkish software companies have been exporting services in major and niche segments

Selected Examples

	Turkish Company	Product	Achievement
Major Segment		Various tools in Enterprise Resource Planning , Customer Relationship Management and Warehouse Management Systems	Largest domestic company with ~\$40M annual revenue and ~\$300M valuation, acquired Romanian company to increase exports
Niche Segment		Artificial Intelligence powered multichannel marketing tool	Received \$32M investment in July 2020 to enter US Market
		Alert tool for developers to spot alarming incidents in the development platform	Acquired by Atlassian from US - owner of Jira, major project management tool- for \$295M in 2018
		Extension to increase performance of database	Acquired by Microsoft with undisclosed deal in 2019

Source: Expert Interviews, BCG Analysis



Turkey is strategically located to serve near geographies with datacenters and related software services

Proximity to addressable markets is key



Data needs to be **processed and stored close enough** to derive optimal real-time value



Distance effects the **effectiveness** of **complementary services** in aftercare



More relevant for hardware-related infrastructures (e.g. datacenters and related software services)

Turkey's location provides significant addressable market



Europe,
Central Asia,
Middle East and
North Africa



≈ 30% of
World
GDP



≈ 20% of
World
Population

Turkey has competitive advantages over near geographies

Potential
Competition

Turkey's competitive
advantage

Major competition

Eastern
Europe

~30% cheaper labor cost
with competitive quality

Central
Asia

Qualified labor force
Lower country risk

MENA

Qualified labor force



We assessed opportunities in three major segments for digital space

Segments

Definition

Major Players



Data Centers & Cloud Storage

Building a **dedicated, climate controlled and secured space** for hardware to store data and provide **online storage** through cloud services



Share of **3 major US companies** in the global market¹



Software Services

Outsourcing of software services or **developing software** products by established brands to be used by enterprises



Share of **5 major US companies** in the global market²



Technology Startups

Developing **technology-oriented innovative businesses** bringing a new solution to the market



Share of **US Companies** in top 100 Venture Capital³

Source: Statista, Expert Interviews, BCG Analysis

1-Cloud infrastructure service revenue share for Q4 2019 2 -Enterprise Software as a Service Solution market share for Q1 2020, 3- Preqin Special Report: The Venture Capital Top 100



Establishing Data Centers & Cloud Storage is the fundamental segment to address digital space

Segments

Definition

Major Players



Data Centers & Cloud Storage

Building a **dedicated, climate controlled and secured space** for **hardware** to **store data** and provide **online storage** through cloud services

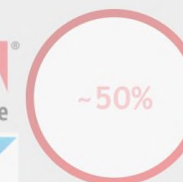


Share of **3 major US companies** in the global market¹



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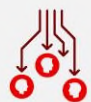
1-Cloud infrastructure service revenue share for Q4 2019 2 -Enterprise Software as a Service Solution market share for Q1 2020, 3- Preqin Special Report: The Venture Capital Top 100



Data center is a key opportunity to attract investment and become a regional technology hub

Data centers need significant investment and leading companies need partnerships...

... they are investing in near geographies to cover the opportunity in the region



Critical to serve a **region** since **domestic markets** do not usually provide **sufficient scale**



Geographical **proximity** is vital and **leading companies** are **forming partnerships** to serve new geographies



Attracting **FDI** is critical both to reach necessary **capital** and **know-how**



Majority of **investments** for datacenters have **significant value** surpassing \$1B



Online storage through data centers is **complemented** by **services** such as security, disaster recovery and remote working (VPN)

Major hub attracting significant investments



Poland

Google is investing \$2 B for data centers becoming operational in **2021**

Microsoft announces a \$1 B digital transformation plan for cloud services in the next 7 years



Romania

Amazon opened Technology Development Center in 2018



Bulgaria

HP, IBM, Cisco operate large R&D Centers employing thousands of employees



Poland has taken solid steps to become a regional technology hub

Incentivized and supported investment for the sector



Provided **incentives in R&D** both for **domestic and international companies** in the form of: **EU grants, national funds and tax relief**



State treasury owned bank and **Polish Development Fund** funded establishment of local **"Domestic Cloud Provider"** through Joint Venture

Built long-lasting and sustaining relationships

International Companies



Strengthened relations after foundation of **Google for Startups in Warsaw** in 2015



Became a **trusted operating partner** for Microsoft with 30-year track record

Nearby Countries



European Union

Established positive relationships with neighbor countries through European Union

Negotiated integrated deals between local and global players



"Domestic Cloud Provider" **will resell Google cloud services** and **mutually produced services**

Google will **build datacenters** for CEE, provide **strategic insight** and **train experts**



Microsoft partners with a different local cloud player: **Chmura Krajowa** to serve **Polish public institutions and businesses**

Aims on boosting digital competencies of organizations through +150k individuals to **grow the market**



Turkey has potential to be a regional technology hub for US technology companies

Turkey can be regional hub to serve nearby geographies



Leading tech companies already established in Turkey with sales and customer relations functions and regional headquarters



US tech companies can be incentivized to position Turkey as a regional tech hub



Prerequisite for partnership is stability of relations with nearby countries

Domestic market can be addressed with partnerships



Significant room for growth in domestic market:

- Growing need of public sector
- Emerging needs for SME
- Access to B2C



Local Telco companies have established domestic network in all B2B and B2C segments



Global companies have strong solutions in cloud services

TAİK can take active role in facilitation of relationships



Communicate Turkey's investment story to US-based tech companies to position Turkey as a regional tech-hub



Facilitate formation of joint ventures between US-based tech players and domestic Telco players to target domestic market



There are different models to be competitive in software services

Segments

Definition

Major Players



Data Centers &
Cloud Storage

Building a **dedicated, climate controlled and secured space** for hardware to store data and provide **online storage** through cloud services



Share of 3 major US companies in the global market¹



Software Services

Outsourcing of software services or **developing software** products by established brands to be used by enterprises

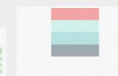
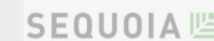


Share of 5 major US companies in the global market²



Technology
Startups

Developing **technology-oriented innovative businesses** bringing a new solution to the market



Share of US Companies in top 100 Venture Capital³

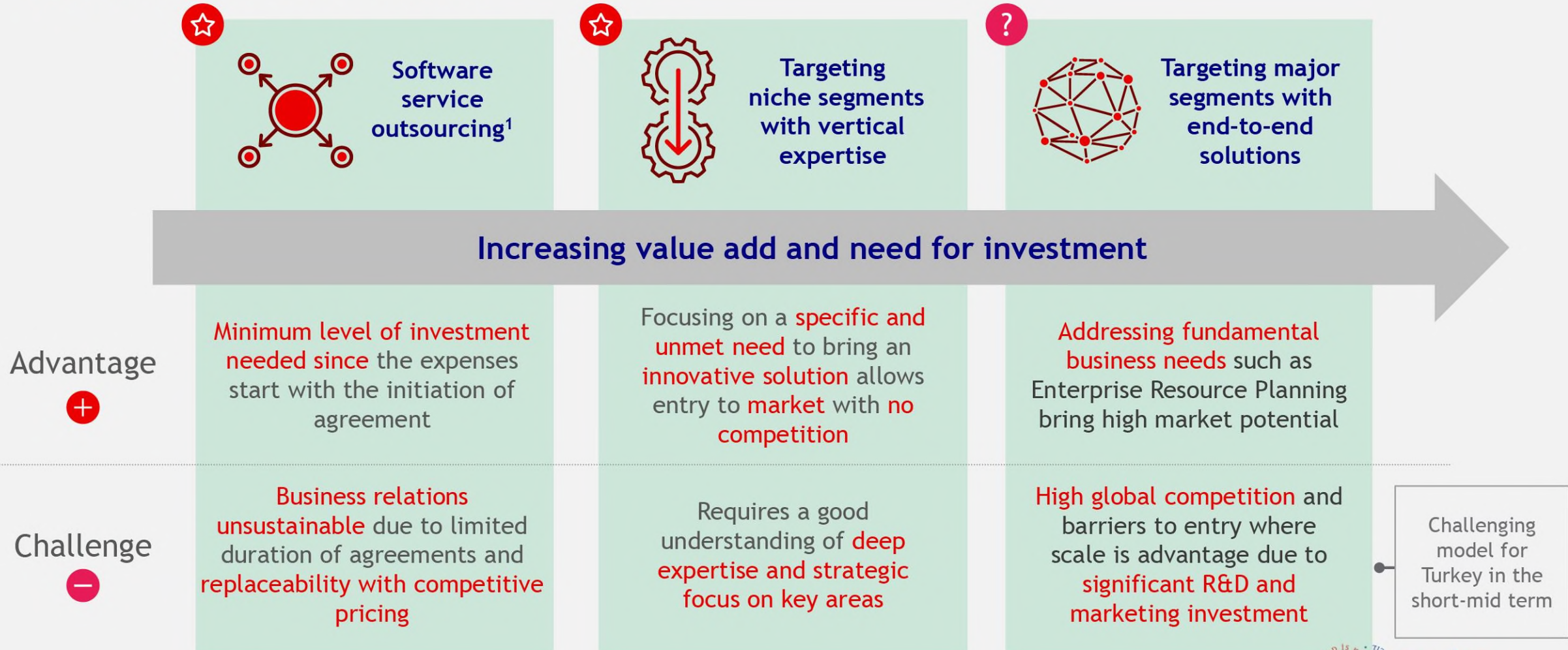
Source: Statista, Expert Interviews, BCG Analysis

1-Cloud infrastructure service revenue share for Q4 2019 2 -Enterprise Software as a Service Solution market share for Q1 2020, 3- Preqin Special Report: The Venture Capital Top 100





We identified three models to address the potential in software services



Source: BCG Analysis, Expert Interviews

1- Includes outsourcing for business processes and computer programming



Benchmark countries have taken different approaches to become globally competitive in IT services



India



Global powerhouse for IT service outsourcing



Focused on outsourcing with **direction** of the government



Established Tidel Park for **clustering**: Asia's **largest software park** in Chennai



Established **governmental fund**: NFSIT¹



Romania



Provides niche solutions within banking sector



National Bank of Romania launched **FinTech Innovation Hub**



Deutsche Bank and **ING** chose Bucharest for their **IT development hubs** bringing **expertise** to the region



Multiple **Romanian software companies** established **niche solutions in banking** such as AI powered customer support



Israel



Global hub for Cybersecurity



Top performer nation in **R&D investment**² : 4.6% of GDP



Joint **Binational R&D Programs** with other countries to increase investment



Invests heavily in **Defense Technologies** to build **expertise**



Turkey has competency to address the potential in software services with different models

Turkey has competitive capabilities for both software service models...

...and can follow the path for each service model

1 Software service outsourcing



Turkey has **talented developers** and has **competitive labor cost rate**



Form a cluster of companies to provide **software service outsourcing** with competitive pricing and facilitate matchmaking with buyer companies in US

2 Targeting niche segments with vertical expertise



New generation companies are building **expertise in niche segments** (e.g. fintech, marketing, medical etc.)



Identify, support and guide **companies aiming addressable niche markets** and facilitate matchmaking with potential US buyers



Developing technology startups is another segment to address digital space

Segments

Definition

Major Players



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Building a **dedicated, climate controlled and secured space** for hardware to store data and provide **online storage** through cloud services

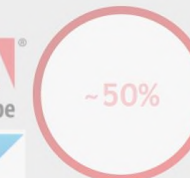
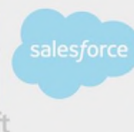


Share of 3 major US companies in the global market¹



Software Services

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Share of 5 major US companies in the global market²

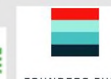


Technology Startups

Developing **technology-oriented innovative businesses** bringing a new solution to the market



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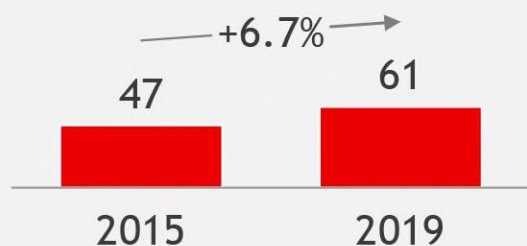




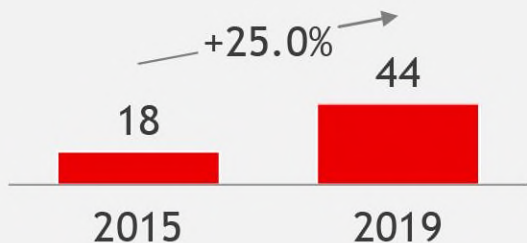
Startup ecosystem in Turkey has been growing with acceleration efforts

Accelerator factors for startups have been gradually increasing

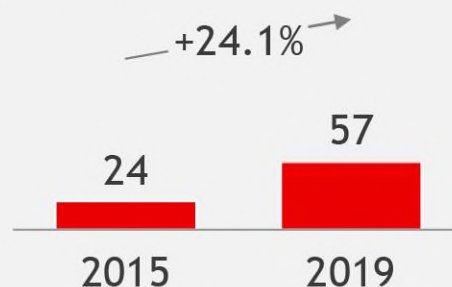
Accelerator Programs



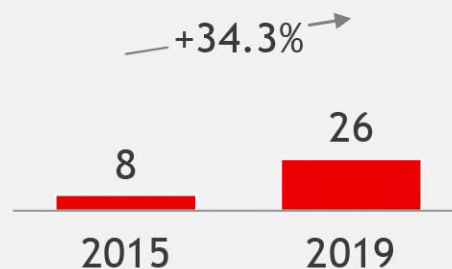
Co-working Spaces



Technoparks



Local Venture Capital Companies



Resulting in a growing startup ecosystem starting to receive global highlight

+7,500

Operating Startups

+550

Startups established each year

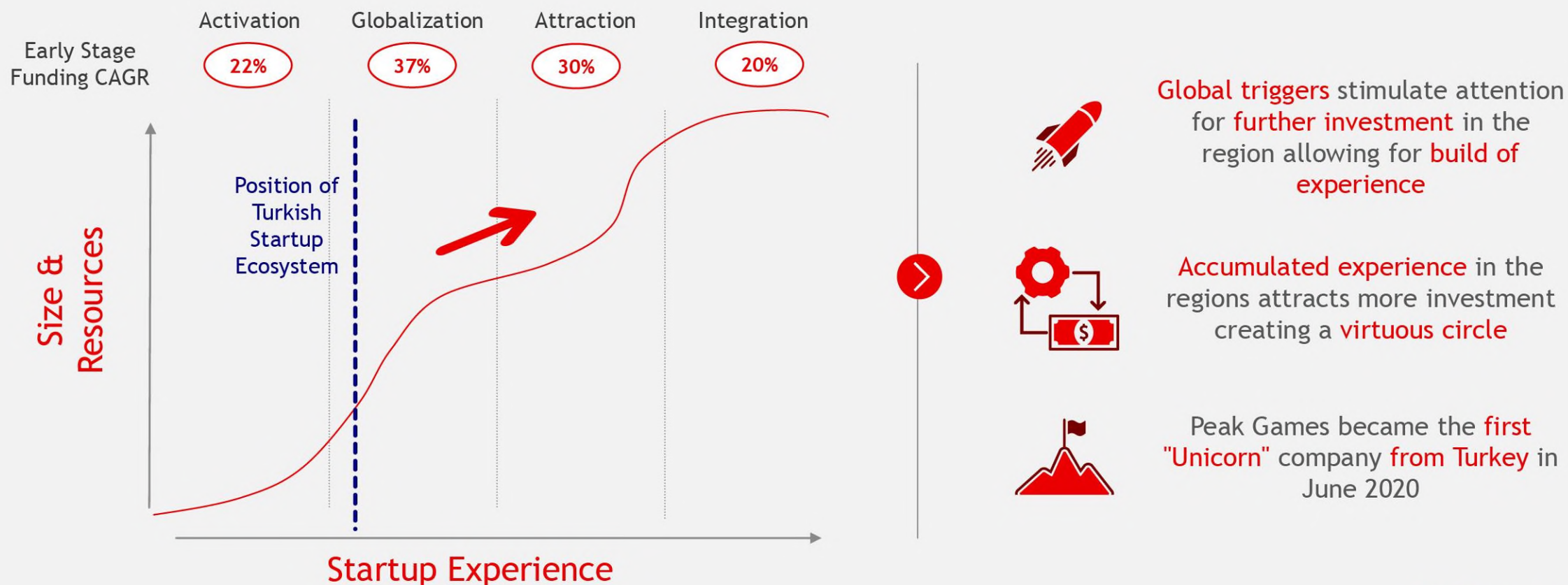


Istanbul is selected amongst top 20 emerging ecosystems¹



Growing Turkish startup ecosystem is about to enter a virtuous circle with a need of few concrete triggers

Phases of Startup Ecosystem Lifecycles

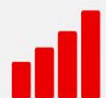


Source: Startup Genome Global Startup Ecosystem Report 2020, TÜSİAD



Gaming is a high potential-market to grow and target the US market

Global gaming market proves potential with different business models



Gaming is a high potential market to scale and **easier to expand globally**; US is the largest market with 24% share in 2019¹

Gaming segments

Hyper-casual gaming

Easy to play mobile games with a **potential to reach mass market** with low frequency and retention

Experience gaming

Games targeting **niche segments** with **high quality level** and **game design** with sticky players



Number of users and **lifetime value** generated is the key **success criteria** for both segments

Turkey has proven its competency in both models...



Turkey is amongst **Tier 1 countries** competing with US, UK and South Korea

Turkey has **developed expertise in gaming** and a **solid ecosystem** with successful examples



Segment

Hyper-casual

Acquisition

\$250M in 2018



Hyper-casual

\$168M in August 2020



Experience

\$1.8B in June 2020



Designing capability can be further developed



Experience gaming needs time for R&D and capital: Need for strategic investors with long-term vision and high capital funding



Attracting investment is a fundamental element for success in developing the startup ecosystem



Brazil

Key success factor: Attracting foreign investment to feed the startup ecosystem

Accelerating factor



Apex-Brasil¹ takes active role in attracting investment for startups by support programs to access Brazilian market and **matchmaking** since 2010



Apex-Brasil has a strategically located **office in San Francisco** to reach US venture capital



South Korea

Key success factor: Supporting the growth of ecosystem with internal investment

Accelerating factor



Government initiated strong funding of over **+\$14B** through public and private finances in the last 5 years



5th highest investor in R&D with **\$72B** annual R&D spending

VC² Investments in Brazil (\$B)



20x Turkey's VC Investment

+5

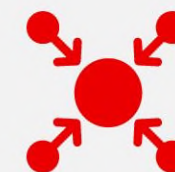
Number of new unicorn companies in Brazil in 2019

3rd after US and China

12

Number of Total Unicorn companies by January 2020

6th country in the world



Seoul is amongst top 20 global startup ecosystems



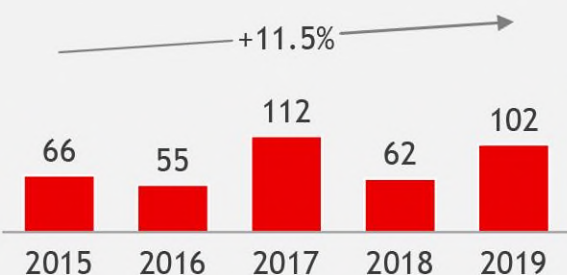
Turkey needs to attract external resources

Funding and global know-how is needed to reach the activation phase

Venture capital funding especially in later stages can improve along with expansion and scaling experience...

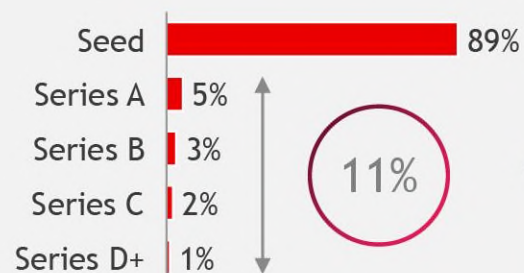
...bringing the need to attract external resources

Venture Capital Funding in Turkey (\$M)



Accounts for **0.03%** of 2019 global VC¹ investments

Breakdown of VC Investment in Turkey for 2019



Series A+ investments account for **95%** of global VC¹ investments

Critical Needs for Global Expansion



Later stage investments - Series A and beyond



Knowledge on previous scaling and expansion experience - limited in Turkey



Increase attraction of foreign VC especially for later stage investments



Mentoring early-stage startups and scale-ups and establishing a global network of mentors for global exposure

We recommend TAİK initiates: "TR-US Digital Corridor"



Establish TAIK Digital Task Force (with the involvement of leading companies and associations) to facilitate the implementation of recommendations and act as the bridge between Turkey and US digital effort



Attract investment by communicating Turkey's investment story to US-based tech companies and facilitating strategic partnerships



Support Turkish software companies on exporting services to the US by providing insights on US market and matchmaking with potential buyers in US



Promote Turkish start-up ecosystem, attract US-based VC and establish a **mentor club** including Turkish and global network



TR-US Digital Corridor can accelerate TR-US economic relations reaching significant impact by 2030

Data Centers & Cloud Storage



Annual
opportunity in
2030

~\$1.8B
Datacenter FDI
in 2030

Cumulative
opportunity for
2020-2030

~\$15B
Cumulative
Datacenter FDI

Software Services



~\$2B
Exports to US
in 2030

~\$10B
Cumulative
Exports to US

Technology Startups



~\$6.5B
VC Funding
Attraction in 2030

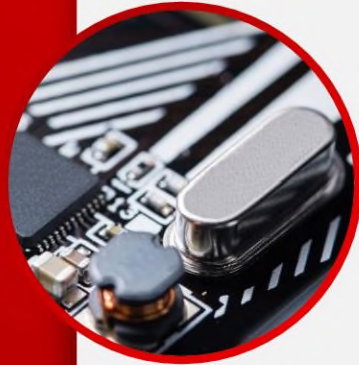
~\$30B
Cumulative
VC Funding Attraction

Source: BCG Analysis

Sizing the prize details can be found in Appendix



Digital Space: IT Services and Technology Startups



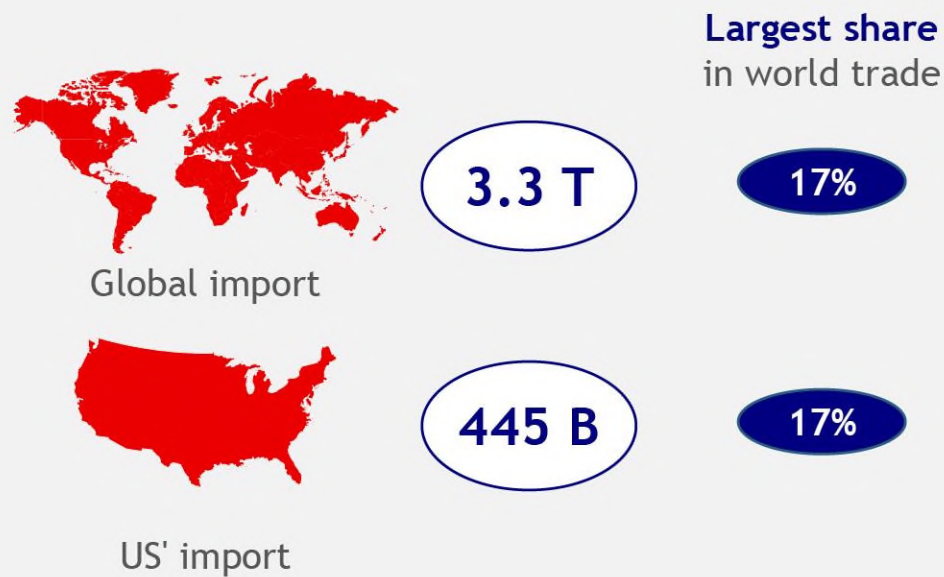
Electrical Equipment & Electronics



Electrical Equipment & Electronics is the largest segment in trade

Shift in US Imports from China in 2019 accounted for **\$34B**

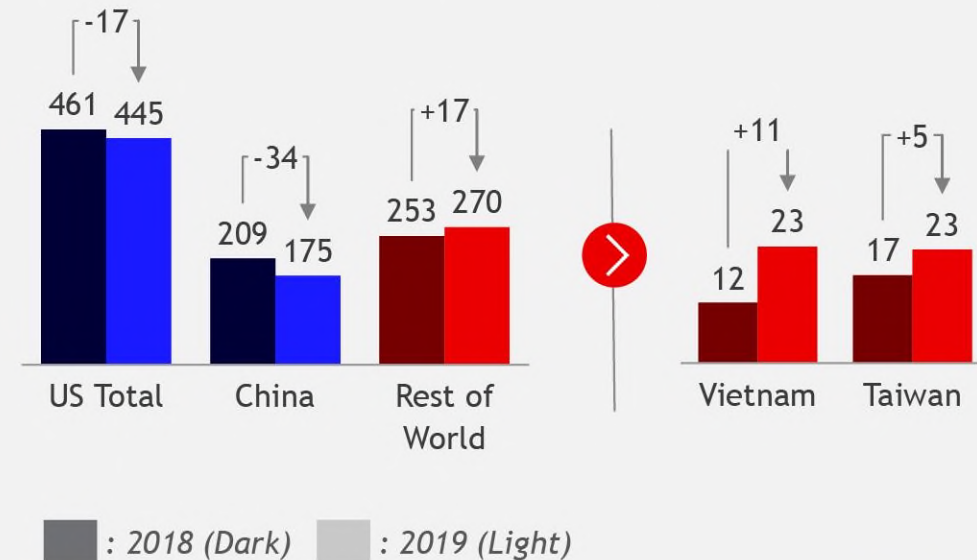
E&E has the largest share both in US and global imports



There has been a shift in US imports from China towards inshore and other Asian countries

Change in US Electronics Imports

Change in US total, China and RoW imports (\$ B)

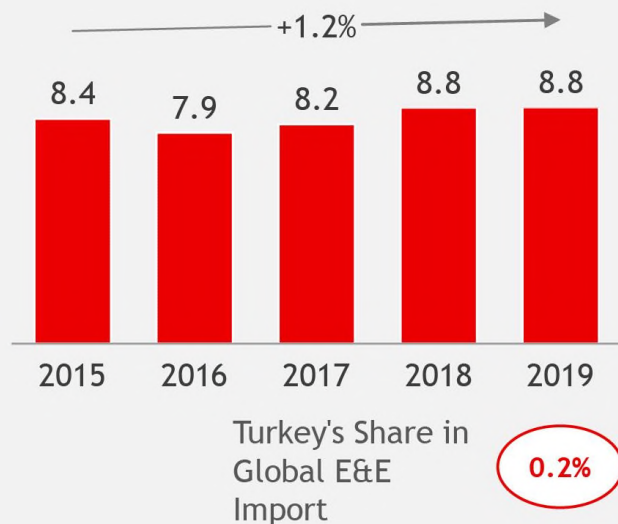




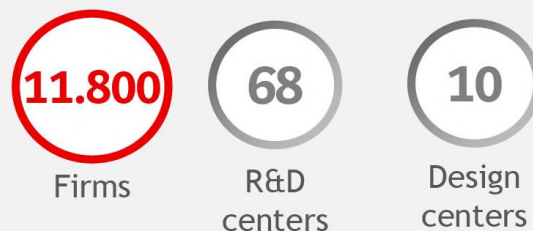
Turkey's export in E&E has been stagnant **but has promising capabilities and efforts**

E&E exports has been stagnant

Turkey's Exports in Electrical Eq. & Electronics (\$B)



... but has certain capabilities



With major players



And export in some segments



... and promising efforts on capability building



Semiconductors **critical** in producing components and **high-end** products



aselsan



Tübitak & Aselsan **co-invest** in Semiconductor Research Laboratory



Universities are building capabilities on **design** and **manufacture** of **semiconductors**





We identified two approaches to build capability in E&E

Long-term effort with clear vision, direction and sustained investment required

Approach:



**FDI driven
integration with
GVCs**



**Internal Capability
Building for Higher
Value-add**

Key Success Criteria:

**Reliable Cost Competitiveness
in Production**

**Sustainable and Efficient
Production with High Quality**

Driven by:



Availability of affordable labor



Incentives on trade and investment



Sustained confidence on perception as
a stable FDI location



Investment in human capital



Strong logistic infrastructure



Advanced manufacturing capabilities
and investment in R&D



Public-private sector cooperation

Source: BCG Analysis



Benchmark countries have pursued mixed paths in building capabilities around E&E and adjacencies



China

FDI-driven GCV integration
then built **capabilities** in
major segments



Emergenced as an **export platform**
for **ultra-cheap** labor after
joining WTO in 2001



Entered **globalization phase** of
domestic electronics
companies including Huawei
and Lenovo from 2005 onwards



Announced "Made in China"
in 2015 incentivizing
high-tech value production



Malaysia

FDI-driven GCV integration
then built **capabilities** in
niche segments



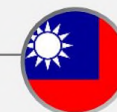
Became **assembling** and **testing**
hub for global companies:

By 2003 **Motorola, Dell and Intel**
employed 90k people in Malaysia



Government announced **National**
Biotechnology Policy in 2005 and
Biotech is expected to account
for **5% of GDP in 2020**

Bio-tech includes application of
electronics to problems in biology (e.g.
automated X-ray inspection, optical
inspection, electrocardiographs etc.)



Taiwan

Focused on building **domestic**
E&E supplier **companies**



Created a **strategy focusing on the**
semiconductor industry with the
cooperation of gov't and private
sector starting from 1978



Manufacturers for Apple



Selected Examples

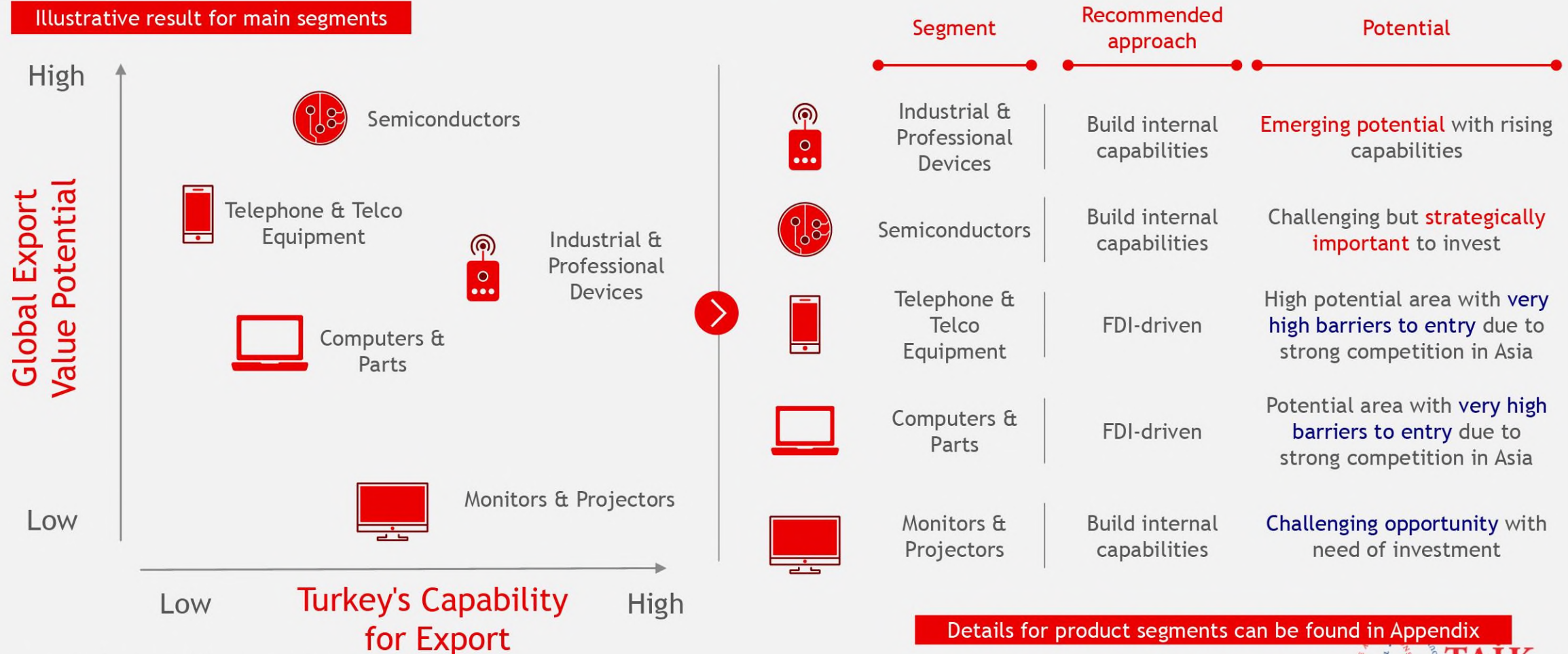
Resulted in
emerging of a tech-
supplier ecosystem
with selected
companies having
+\$250B annual
revenue in total





We assessed 5 major segments of E&E to identify the opportunity space for Turkey

Illustrative result for main segments



Details for product segments can be found in Appendix

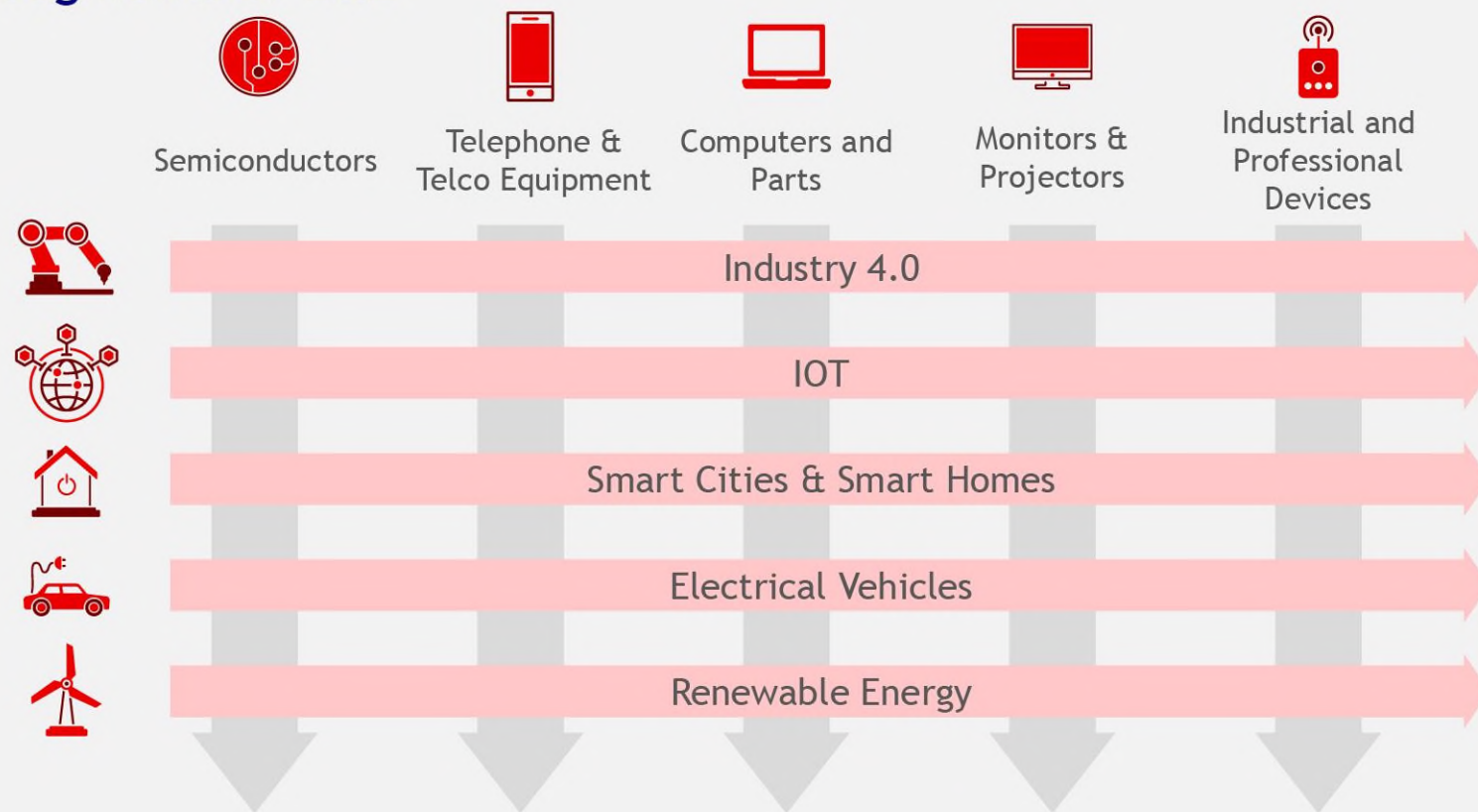
Source: TESİD, Expert Interviews, BCG Analysis



Instead of prioritizing E&E sub-segments, Turkey needs to focus on emerging trends cross-cutting E&E segments

Confirmed with industry experts

New generation technologies are rising and cross-cutting major segments of E&E



Key products to focus on

Selected examples



Power Electronic Devices



Smart Meters



Sensors



Microchip and system design





Turkey needs a long-term strategy to seize opportunities in E&E

Competitive countries have already initiated their long-term strategies

Competitive countries introduced long-term strategies to build capability in E&E with strong governmental drive

Turkey needs a long-term strategy to build capability in E&E

	 Made in China	 Make in Vietnam
Term	2025-2025	2025-2035
Selected Industries	<ul style="list-style-type: none"> Robotics Aerospace Electrical vehicles Renewable Energy Power Equipment Maritime Equipment Medical Electronics 	<ul style="list-style-type: none"> Computer Equipment Phones and accessories Medical Electronics Renewable Energy



Previous Examples on Capability Building

aselsan

Establishment of
Military Defense
industry

beko **VESTEL**

Establishment of
TV and White
Goods Industry

 **arçelik**



TAİK can assist in driving Electrical Eq. & Electronics forward through multiple initiatives



Cooperate with sectoral associations (e.g. TESİD) to identify and address needs on capability building, export-inclinations, marketing for the US market



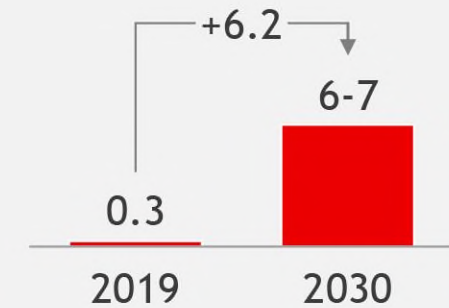
Build awareness on strategic significance of E&E in global and US exports on the governmental level to build capability



Facilitate strategic partnerships for establishing manufacturing hubs in Turkey with key suppliers of US-based mobile phone and computer companies



Turkey's Annual E&E Export to US (\$B)



~\$20
Billion

Cumulative incremental E&E exports to US between 2020-2030



Joint opportunities in Africa

Strong opportunity space exist for US and Turkish companies to collaborate in Africa



Sectoral

- In which sectors US and Turkish companies can collaborate?



Regional

- In which countries US and Turkish companies will collaborate?



Collaboration basis

- What complementary roles US and Turkish companies have in collaboration?

Strong opportunity
space exist for US
and Turkish
companies to
collaborate in Africa



Sectoral

- In which sectors US and Turkish companies can collaborate?



Regional

- In which countries US and Turkish companies will collaborate?



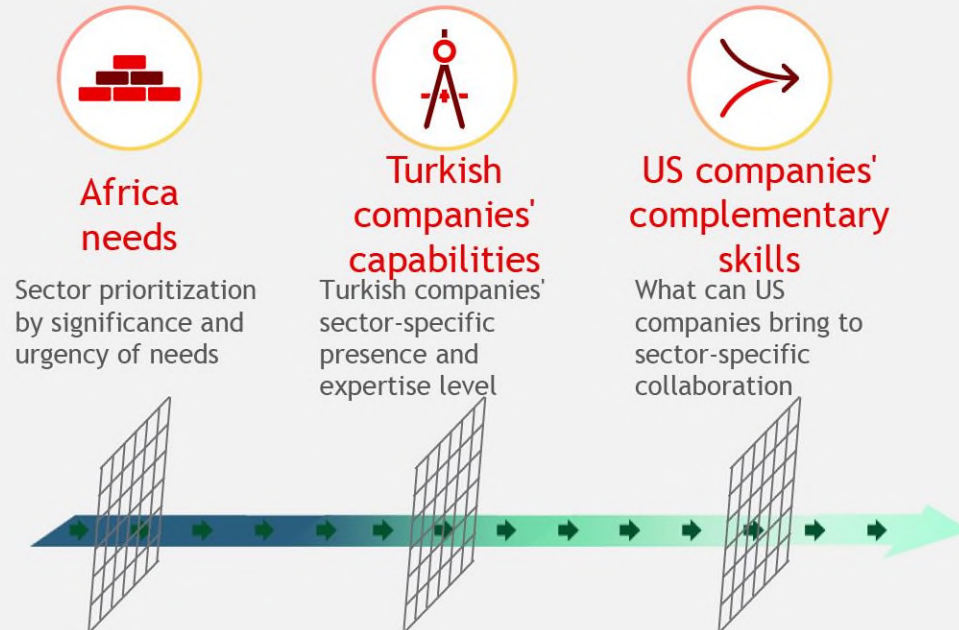
Collaboration basis

- What complementary roles US and Turkish companies have in collaboration?



Construction related industries are the main sectoral collaborative areas

Filtering criteria



Sectoral collaborative areas

Core sectors



Construction, real estate



Public network, water sanitation



Transportation infrastructure



Building materials

Other sectors



Consumer goods



Industrial goods

Why out of focus

- High dependence on Africa's mid-long term economic development (not urgent)
- Not necessarily US cooperation

 : Main focus



Infrastructural upgrading is the major stepping stone for Africa; yet project financing is a challenge

Africa has a major potential for investors ...

- 5** of 10 **fastest-growing economies** are African in 2019¹
- 40%** of the world's population **will live in Africa** by the turn of this century²
- 60%** of African population are under age 25, represents **immense workforce potential**

... but needs major infrastructural upgrading

Big infrastructure investments required to leverage the potential and increase value add



Highways and rail roads



Ports, dams and airports



Public networks, electric grids



Hospitals, public buildings

Project financing is the main obstacle for African countries

African countries cannot finance big infrastructure projects by themselves

Also, **external financing** is difficult and costly due to high risk profile of the continent



Difficult/unsafe work environment



High economic and political risks



Corruption related concerns



Infrastructure development is a key driver for progress across the African continent

Infrastructure investments are the main requirements for Africa to reach its potential ...



Roads are the main mode of transport

→ 53%

of roads are unpaved



Most ports are poorly equipped

→ 50%

more handling costs in Africa than any other place



Electrification rate is 43% for household

→ 600 million

people without access to electricity

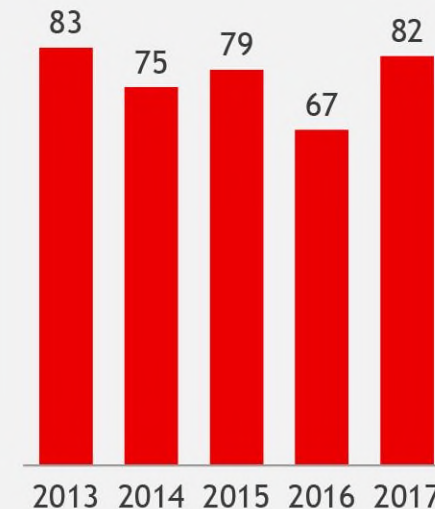


~150
\$ B

of infrastructure investment is needed for Africa to reach its potential¹

... but, current funding is ~80B which is ~\$70 B shorter than actual annual need

Total infrastructure funding in Africa (\$ B)



80
\$ B

Approximate average infrastructure funding in Africa between 2013 and 2017



Chinese companies increased their influence in the African continent

Chinese approach to globalization and capabilities are key to its success in Africa

Chinese companies' expansion characteristics



High-risk appetite and low profit margin model fits well with developing regions



High government involvement and flexibility on working with less democratized regimes



Strategic engagement through port access to secure "Belt and Road Initiative"

Infrastructure expertise and strong project financing

- Chinese companies participated over 40% of infrastructure projects in Africa as of 2018¹
- Chinese companies and institutions have a significant share:
 - 33% built by Chinese companies
 - 19% financed by Chinese institutions
- China is the single-largest financier by of African I&CP² projects

Mining activities and valuable natural resource trade



Other countries are dependent on China for natural resources, especially rare earth materials



Limiting other countries' access to African resources through strategic port investments

China provides funding to even countries without financial guarantees in exchange for long-term usage of;



Mineral and metal ores

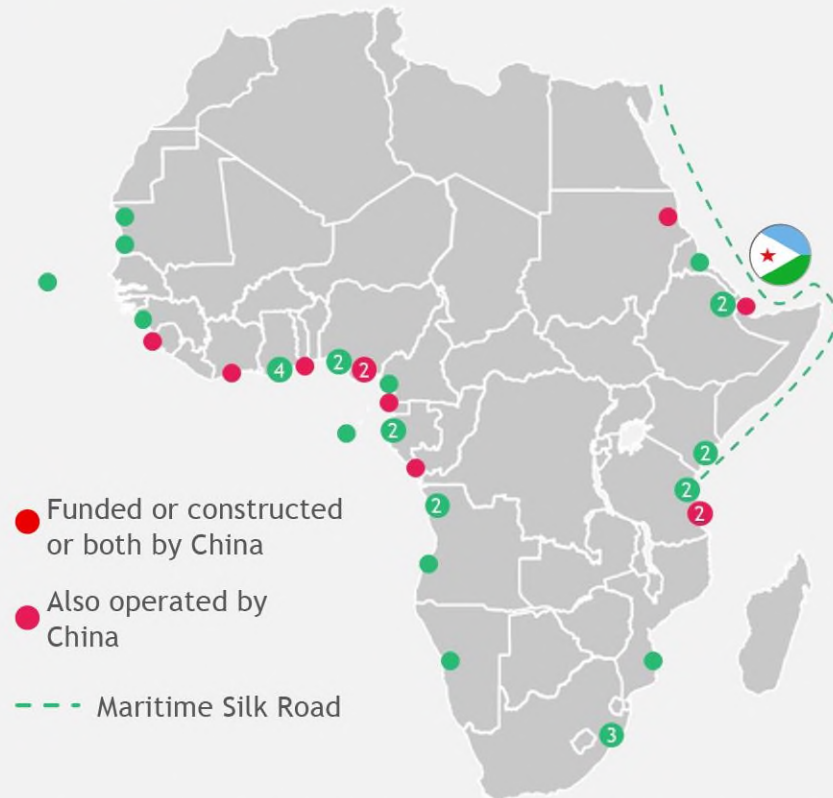


Precious stones and metals



China increases its presence in Africa through port investments; also securing imports and economic access to inlands

46 sub-Saharan African ports with financial, construction, or operational involvement by Chinese entities¹



Port expansion and rehabilitation projects are key to furthering African growth and development

90%

of African exports depend on ports



Port investments are one of the main avenues China established **commercial supremacy** and became the continent's **main trade partner**

Especially ports operated by Chinese government may pose **strategic risks** by enabling Beijing:



Restrict access to its rivals



Utilize ports during conflict

11

of 46 ports are operated by Chinese



Djibouti is the **most concerning port** given its proximity to a **maritime chokepoint**. China controls two of the five terminals in Djibouti



1. 46 sub-Saharan African ports with Chinese involvement were identified in the Center for Strategic International Studies Africa Program

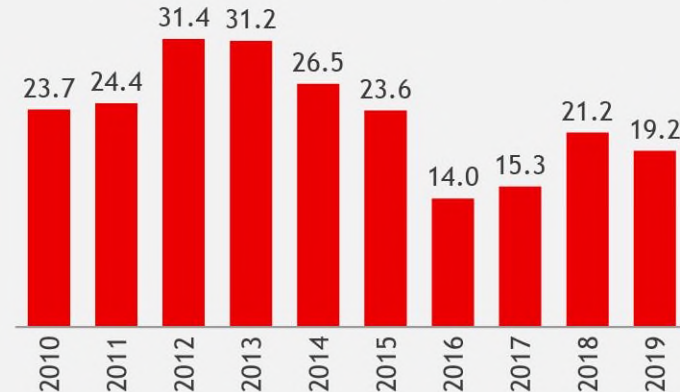


Turkish construction companies have been executing large projects in Africa -further potential with easier access to project finance

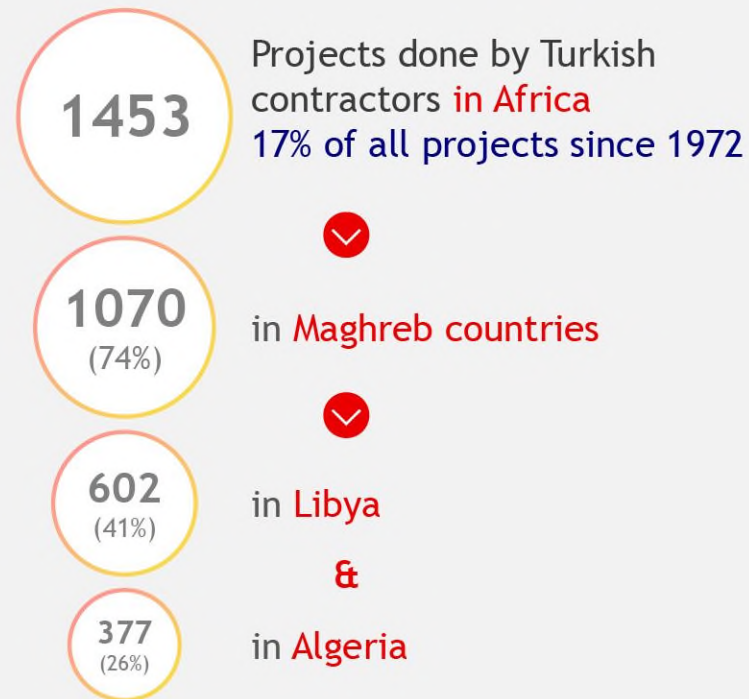
Turkish companies have improved their ability to do business abroad

Turkish contractors have done **10,169 projects** in **126 countries** with a value of **\$ 401 B** between 1972 and 2019

Construction project value undertaken by Turkish firms between 2010-2019 (\$ B)



Turkish companies have done **1453 projects** in Africa till 2019, mostly in Libya and Algeria



Turkish companies' interest shifted toward Sub-Saharan Africa after political changes

Turkish contractors have done **several important projects** in Sub-Saharan Africa between 2017 and 2019



Strong opportunity
space exist for US
and Turkish
companies to
collaborate in Africa



Sectoral

- In which sectors US and Turkish companies can collaborate?



Regional

- In which countries US and Turkish companies will collaborate?

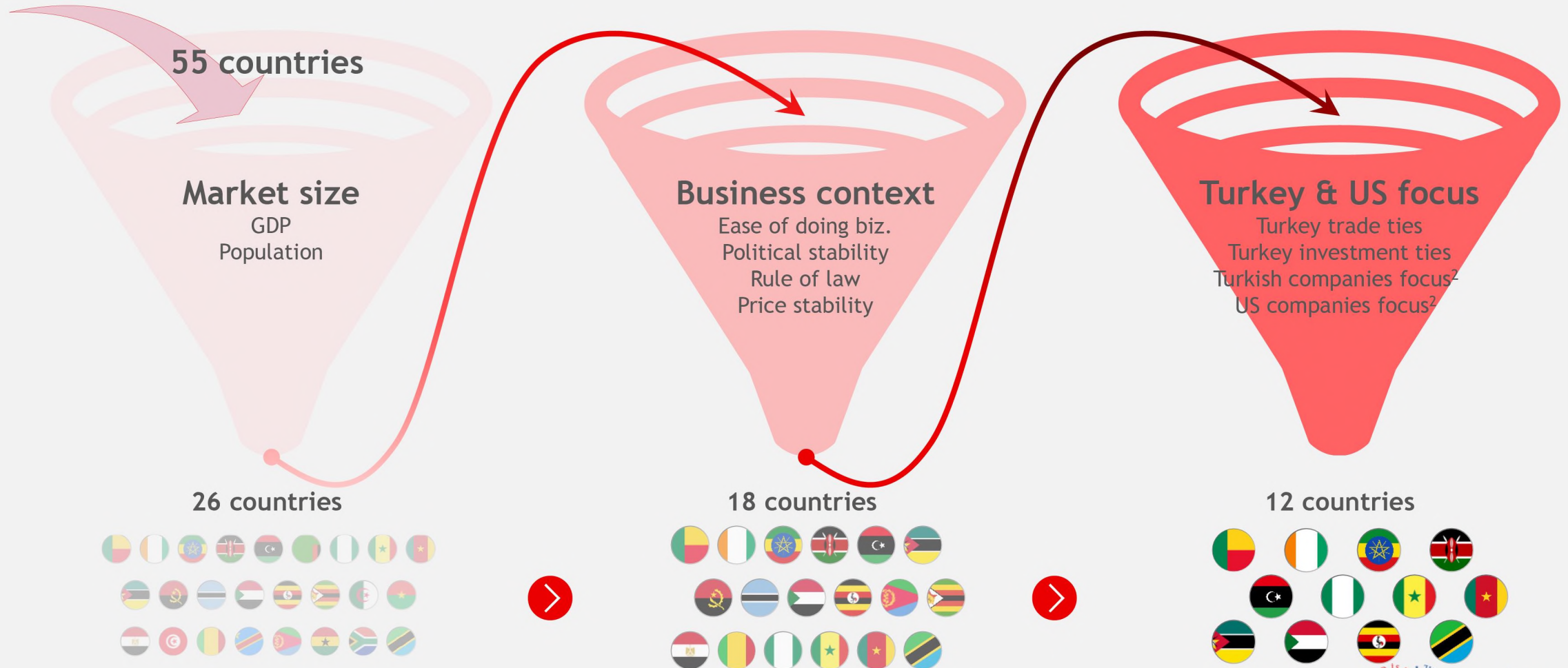


Collaboration basis

- What complementary roles US and Turkish companies have in collaboration?



We have developed a rigorous methodology to select countries of focus

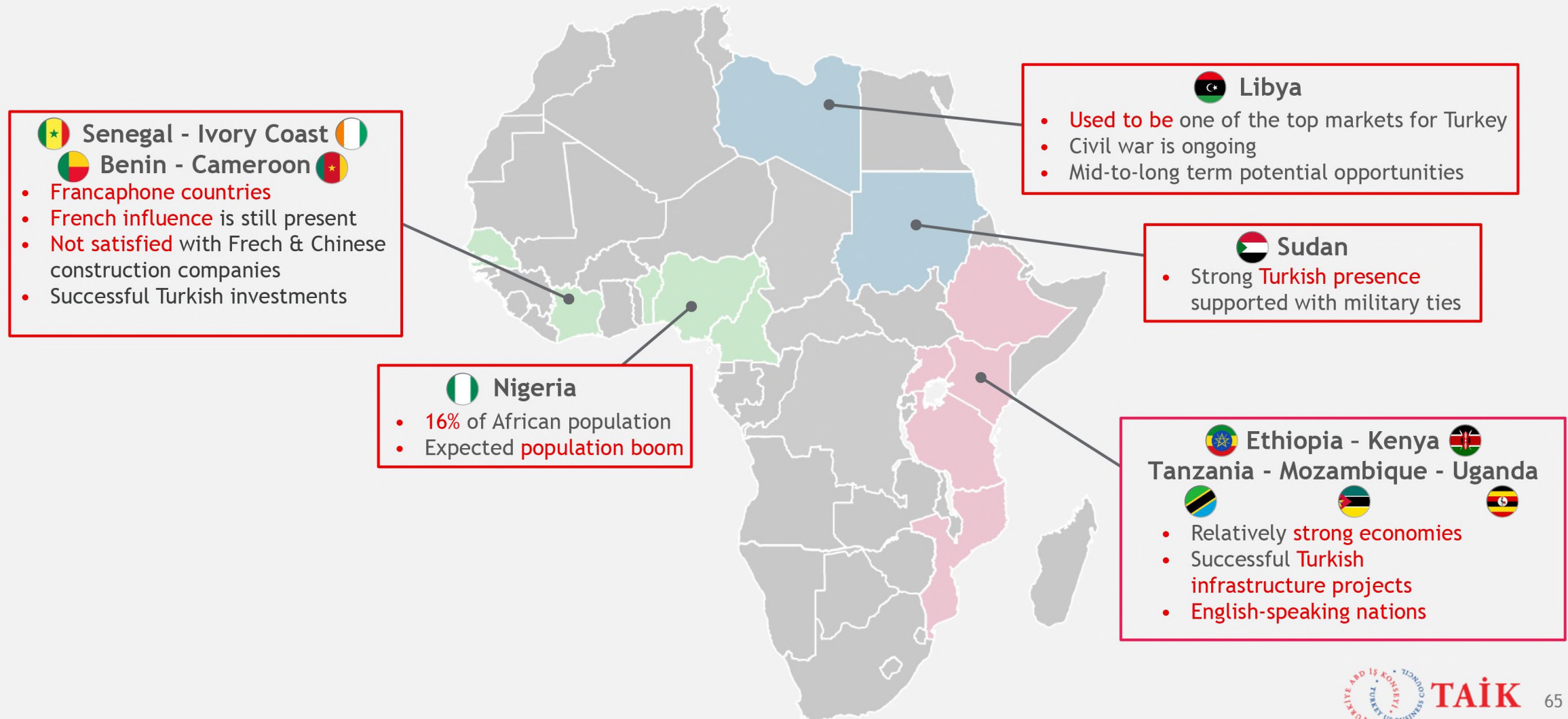


1. GDP > \$ 40 B, Population > 2 million 2. Based on interviews and expert judgement

Selected countries: Benin, Côte d'Ivoire, Ethiopia, Kenya, Libya, Nigeria, Senegal, Cameroon, Mozambique, Sudan, Uganda, Tanzania



12 countries are prioritized for US and Turkish companies collaborate in Africa



Strong opportunity
space exist for US
and Turkish
companies to
collaborate in Africa



Sectoral

- In which sectors US and Turkish companies can collaborate?



Regional

- In which countries US and Turkish companies will collaborate?



Collaboration basis

- What complementary roles US and Turkish companies have in collaboration?



Turkish and US companies can combine skills in Africa

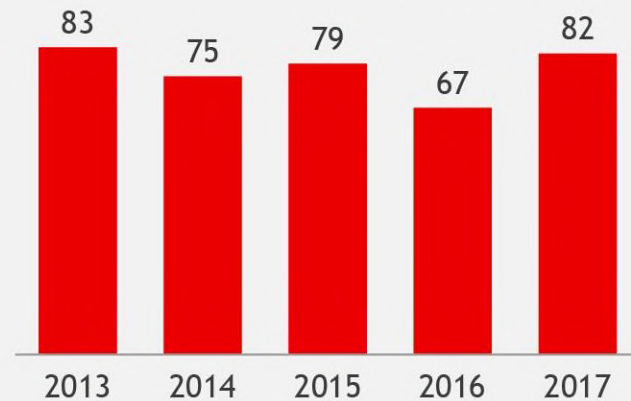




Financing investments in Africa has been the key success factor for Chinese companies

Funding of infrastructure projects in Africa is around \$ 80 B annually

Total infrastructure funding in Africa (\$ B)



\$80 B Annual average infrastructure funding in Africa between 2013-17 (\$ B)

24% of this funding came from Chinese business/institutions as the single largest financier of the continent



Chinese business community shows constant interest on African development financing

- Chinese institutions devoted \$60 billion financing twice in 2015 and 2018, **totalling \$120 B for Africa**
- Chinese financing for infrastructure projects has come mainly from **two policy banks**

Total loans between 2000 to 2015 came from:

- China Exim Bank
- China Development Bank

1. The Infrastructure Consortium includes G20 countries, African Development Bank (AfDB) Group, European Commission, European Investment Bank, Development Bank of Southern Africa 2. Remaining belongs to The China-Africa Development Fund (CADFund) and less private sector loan

Source: The Infrastructure Consortium for Africa report on Infrastructure Financing Trends in Africa, 2017



Africa has not been in the radar of US business interests

Focusing on Africa will have key business implications

Africa has never been a pivotal focus of US business community...



Limited presence of US companies in Africa:

- Only quarter of **trade volume** compared to China
- **US construction companies** focused on domestic market; limited involvement compared to Chinese, French and Turkish companies



... Recent policies to stimulate US business interests in Africa

International Development Finance Corporation (DFC)

US government agency to **invest in developing countries**



Debt financing



Political risk insurance



Equity financing



Technical development

Prosper Africa



Initiative to increase **two-way trade and investment** between US and Africa

US Exim Bank



Manager appointment crisis is over and US Exim Bank is **expected to be active in the continent**

Existing agreement between USExim and TurkExim is an asset

Further engagement is possible to further boost cooperation

USExim wants to be re-active
all around the world,
especially in Africa

US Exim's board **remained unfilled**
about 4 years

\$10 m US Exim was **not allowed to deliver loans** to deals over \$10m

May '19 The Bank's board was confirmed by Senate

Sub-Saharan Africa became one of the top priorities of US Exim

\$4.7 b US Exim **authorized a direct loan** of up to \$4.7b to **Mozambique**




Working with USExim provides
significant financing
advantage to Turkish firms



Even in the optimistic scenario,

- TR Exim gives credit at **Libor +5**
- US Exim at **Libor +<1**

 which provides a significant **financing cost cut** for Turkish firms

Agreement between US and Turk Exims covers only credits with gov't debtor, for now ...



Credits with gov't debtor are guaranteed by **Turkish Ministry of Treasury**

... but, there is no structural obstacle to cover credits with **commercial risk** or **PPP projects**



Realizing projects together



Knowing each others' way of doing business

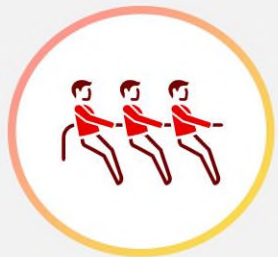


Establishing trust between entities



Possible to **enlarge the scope of the agreement**

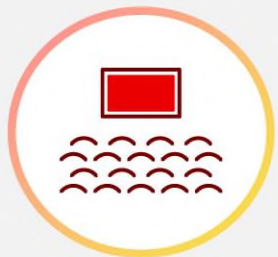
TAİK can take concrete actions to raise awareness on seizing opportunities in Africa by collaborating with the counterparts and companies in the US



Establish an Africa Task Force under TAIK to organize the collaborative ground with US



Close collaboration with TMB (Turkish Contractors Association) to steer Turkish firms' construction strategy in Africa



Introduce possible opportunities to US firms and agencies to partner up with Turkish firms in Africa (via events, meetings webinars etc.)

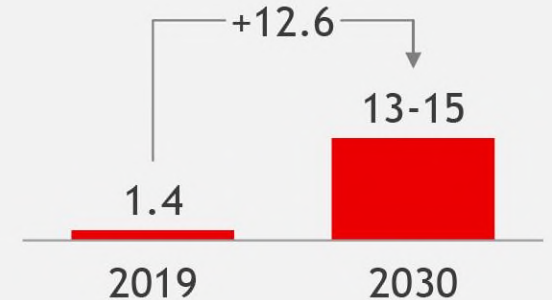


Identify US firms that would have interest in collaboration with Turkish firms in Africa and help **business matching activities**



Help to engage US Exim to support cooperation and to actively finance US-Turkey JVs in Africa

Overtime Project Value
Constructed by Turkey in Africa (\$B)



~\$65
Billion

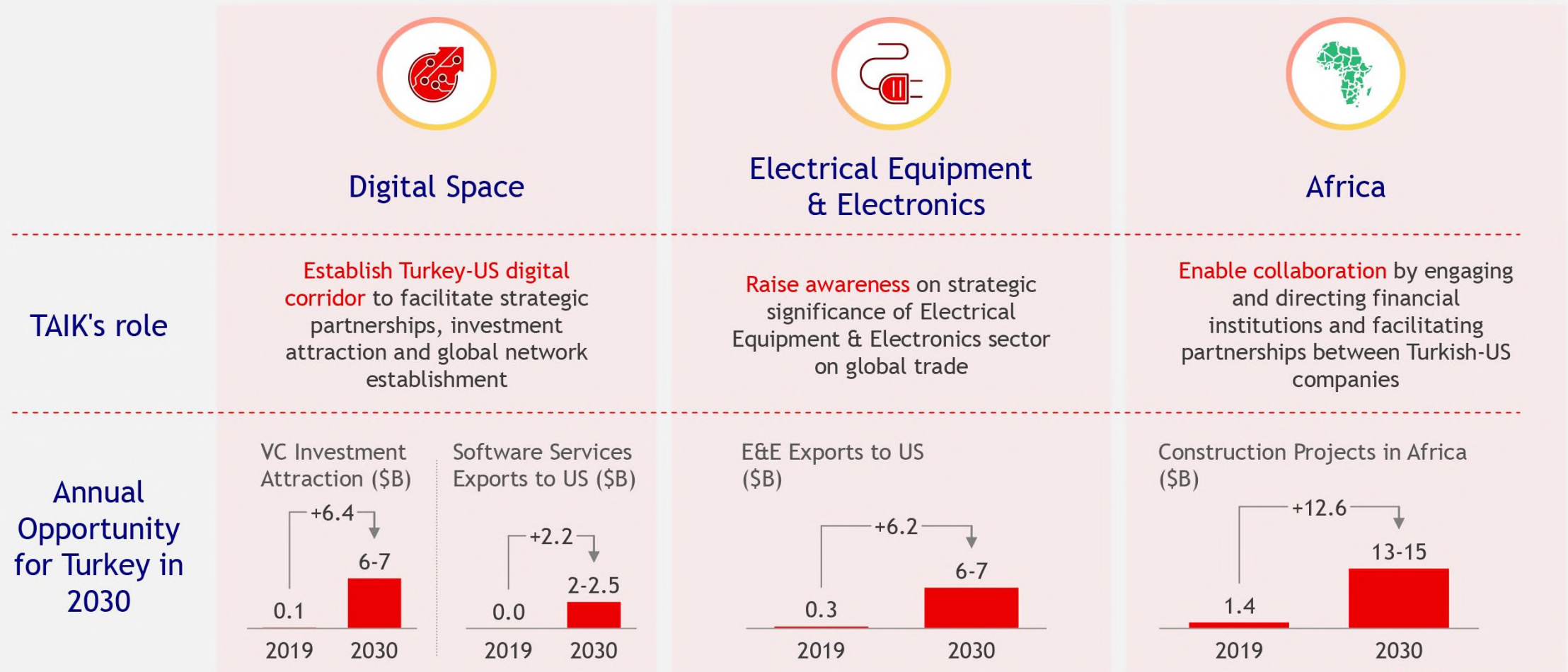
Cumulative
incremental project
value between
2020-2030



Potential opportunities and
size of the prize

Significant opportunity for Turkey-US economic relations

TAİK can be a key contributor to achieve these targets



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